

TRANSITION

Securing a sustainable future for your farm business

RIGHT SIDE OF THE TRACKS

Advice on navigating your way
through changes in farm support



A sustainable future for your farm

Welcome to the first issue of *Transition* – a new quarterly supplement from *Farmers Weekly* to help secure a sustainable future for your farm business.

British farmers stand on the cusp of a new agricultural revolution. Food production remains key. But economic and environmental pressures mean the need to do so – both profitably and sustainably – has never been more important.

Government support for agriculture is changing. Farmers are expected to do much more than produce food: improving soil health, air and water quality, and storing carbon to help mitigate the impact of climate change.

All this means we must refocus our farm businesses – generating a bigger return from the marketplace while optimising performance to ensure enterprises thrive, as well as looking after and enhancing the environment.



OUR PARTNERS

The *Farmers Weekly Transition* partner network is a UK-wide community of farmers, industry stakeholders and influencers working together to secure a sustainable future for UK agriculture.



CONTENT HIGHLIGHTS

For most of us, it is a huge journey. Some of us haven't yet started out. Others are further along the road. But by sharing our knowledge – highlighting the pitfalls to avoid while embracing ideas that work – we believe we can make this transition.

We are grateful to our Transition Farmers who have agreed to share their experiences as they strive to reach this goal. And we are grateful too to our Transition Partners who have agreed to share their expertise and advice along the way.

Working together, as an industry, our goal is the same as yours: a sustainable future for British agriculture and for your farm business.

Johann Tasker, *Transition* editor



ANGUS FINDLAY

How to navigate a path through changes in farm support

See p7



ANGUS FINDLAY

How to make arable rotations more resilient

See p15



EMILY FLEUR

How grass-based dairying can increase farm profits

See p19

If you are interested in joining the network and would like to find out more, please contact Anna Eccleston at anna.eccleston@markallengroup.com



Sandy by Trinity AgTech has kindly provided the sustainability indicators, working with the *Transition* farmers to measure their environmental progress, product provenance and financial prosperity. For more information, please visit trinityagtech.com



MAIN PHOTO: ADOBE STOCK

Challenges and opportunities – where should farmers start?

An exclusive *Farmers Weekly* survey highlights the need for more detail across all sectors. **Johann Tasker** reports

Farmers are keen to secure a more financially and environmentally sustainable future for their businesses. But many say they don't know where to begin.

One-third of farm income comes from the annual basic payment, a *Farmers Weekly* survey reveals. Although many farmers would like to reduce their reliance on this revenue, they say replacing it will be difficult.

The survey was conducted for Transition – a new initiative by *Farmers Weekly* to help growers and livestock producers generate more income from the marketplace while farming in a way that delivers environmental benefits too.

Some 52% of farmers receive up to £30,000 in annual basic payment – although the average is higher at £51,116 because some farmers receive much more. Only 5% receive no basic payment at all. But for one in 10 it represents more than 75% of their income.

In England, where the basic payment is being phased out, three-quarters of farmers have no idea how their business will survive without it. Some 53% said it would be difficult to replace the lost income, with a further 26% unsure if they could.

Future support

The basic payment is being retained for the time being in Scotland, Wales and Northern Ireland. But it is clear that future support for farmers right across the UK will focus increasingly on the delivery of environmental benefits.

The Transition initiative from *Farmers Weekly* will show how growers and livestock producers can achieve this.

It will do so across all of our media formats – in print, online, on video, and via a new Transition Agriculture podcast – following 16 specially recruited Transition Farmers who are changing and adapting the way they farm.

Like many of our survey respondents, many of our Transition Farmers are just starting out on their journey.

One-third of farmers said they had not yet prepared for life without the basic payment. A further one-third said they had only started preparing in the past year. Fewer than one in 10 said they had enough information about farm support in future.

Increasing productivity

“Where farmers have been preparing, they were most likely to be increasing productivity, starting

a new diversification or increasing their off-farm income,” said survey analyst Heather Macleod.

“It is interesting to see that some are selling off land or contracting out farm work and reducing the number of farm staff. This suggests the structure of the industry is already changing – as is the number of people working in agriculture.”

Few respondents said they collaborated with other farmers to increase productivity. Only 28% belong to a farm co-operative, with just 24% working with their farming neighbours to spread costs, such as machinery.

Rather than investing, some farmers are looking to reduce their borrowing and others are winding down their business.

Some are looking to retire – although only 15% said they were interested in a Defra scheme that would allow them to take their remaining direct payments as a lump sum before quitting the industry.

- The survey of 717 farmers was conducted by Macleod Research on behalf of *Farmers Weekly* in May and June 2021. Average farm size was 281ha. Some 74% of respondents were owner-occupiers and 18% were tenants.



JOIN OUR GROUP OF TRANSITION FARMERS

Farmers Weekly is recruiting a group of 16 Transition Farmers keen to secure a sustainable future for their farm business.

Changes in government policy across all four UK nations mean farmers face some of the biggest challenges seen in British agriculture for more than 50 years.

Our Transition Farmers will share their experiences and journeys as they prepare their businesses for a sustainable future in light of these changes.

You can meet our first five Transition Farmers in the pages of this first issue of Transition. They are James MacCartney (Rutland), Vaughan Hodgson (Cumbria), Alan Steven (Fife), and Rachel and Richard Risdon (Devon).

If you would like to join them, we are looking for farmers who are willing to:

- Appear in *Farmers Weekly*, including on video and on our Transition podcast, as well as in photos and written articles both online and in the magazine

- Share your experiences as you strive to become more sustainable – including the opportunities you are seizing as well as the challenges you face
- Be willing to share limited amounts of financial information about enterprise performance and benchmark the sustainability of their farm business.

We are especially keen to recruit farmers who want to be more sustainable (both from a business and environmental perspective) but don't know where to start – as well as farmers who may be further down the line and those somewhere in between.

In return, you will be part of a network of farmers sharing their knowledge, experience and expertise – and receiving informal advice from peers and experts as UK agriculture embarks on a period of huge change.

For further details about becoming a Transition Farmer, email johann.tasker@markallengroup.com



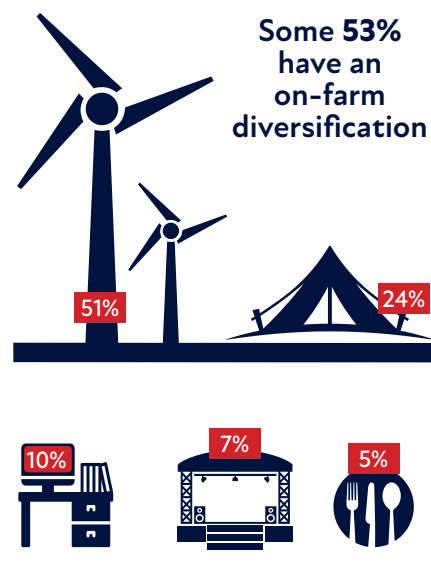
DIVERSIFICATION ADDS MUCH-NEEDED FARM INCOME

More than half of all farmers have diversified their businesses – with renewable energy the most popular source of additional on-farm revenue.

Some 53% have an on-farm diversification – although this rises to 63% in Scotland. Of those, 51% have a renewable energy scheme, including solar panels (76%), biomass boilers (26%), wind power (22%) and anaerobic digestion (7%).

The next most popular diversification is holiday accommodation (24%), including bed and breakfast enterprises. Other diversifications include offices and workspace (10%), leisure activities (7%), and farm shops, cafés and restaurants (5%).

“Smaller farms are more likely to diversify into ventures such as outside catering – probably because they don't have the space to do something on the farm itself,” says survey analyst Heather Macleod.



UNTAPPED POTENTIAL FROM FROM 'CARBON FARMING'

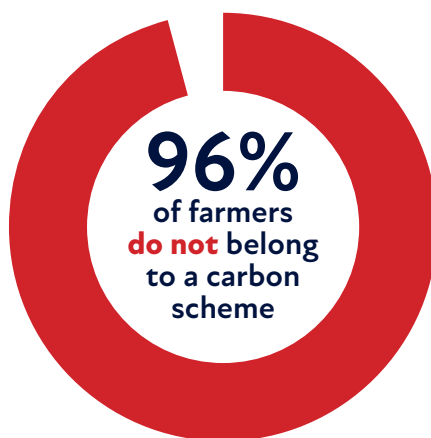
Carbon represents a major opportunity for farmers to increase their income while helping the UK meet its greenhouse gas emissions targets.

But only 14% of farmers have measured the carbon footprint of their business – seen as the vital first stage in generating additional revenue by joining a carbon certification or sequestration scheme.

Almost half of those questioned said they were considering measuring their carbon footprint – with the Farm Carbon Toolkit (37%) the most popular way of assessing their greenhouse gas emissions.

Other calculators included AgreCalc, the Cool Farm Tool and Arla Climate Check – the latter developed by the milk processing co-operative to measure the carbon footprint of its dairy farmer members.

But the vast majority (96%) of farmers do yet not belong to any carbon scheme – reflecting the fledgling status of a market which is set to become an important



source of income for growers and livestock producers in the years ahead.

There will be a special focus on opportunities from carbon in the next issue of *Transition*, due to be published by *Farmers Weekly* on 29 October.

TRANSITION CONTENT HUB FWI.CO.UK/TRANSITION

Advice for farmers seeking to become more financially and environmentally sustainable is now available on the *Farmers Weekly* website.

As well as business advice, the Transition knowledge hub includes articles on ways farmers can improve soil health, enhance their carbon status, encourage biodiversity, and help ensure cleaner air and water.

Farmers can also read and listen to the experiences of our Transition Farmers as they strive to achieve these goals – and how they intend to overcome the challenges they face over the next five years.

The Transition knowledge hub is at fwi.co.uk/transition.

TRADE DEALS

MARKET INSIGHT

AHDB

ENVIRONMENTAL SCHEMES

AGRICULTURAL POLICY

MAKE INFORMED DECISIONS

OPINION & ANALYSIS

The latest on trade and policy at your fingertips

Explore the latest information and analysis on how future changes in domestic policy and trading relationships will affect your farming businesses.

TALKING POINTS



"The UK-Australia deal feels very different. It is the first genuinely new trade deal which has been negotiated by the UK. As such, it is telling that there is a move to completely liberalised trade across all products. While there is a phasing in of this liberalisation for sensitive products such as beef, lamb and dairy, the initial quotas are relatively large when looking at current import demand for these products."

David Swales, Head of Strategic Insight



"EU Tariffs and quotas have been avoided and that is a major achievement because the tariff bill would have been a colossal impediment to trade. But a free trade deal does not mean frictionless trade and adjusting to the new relationship has been difficult. However, looking at the future, the EU market remains important – the UK has not moved location after all."

Tania Gesto-Casás, EU Policy Manager



"Taking a wait and see approach isn't an option, reviewing the business and seeing what needs to be done to secure its future for you and the family, and exploring options to replace the coming reduction in income should be prioritised in 2021."

Steve Dunkley, Head of Business, Insight and Skills

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COMING SOON

FARM BUSINESS REVIEW

AHDB has secured funding from Defra's Future Farming Resilience Fund to help farmers navigate the loss of direct payments and help future proof their businesses. AHDB's Farm Business Resilience service, delivered via a network of local agricultural advisers and consultants, will be available to 4,000 farms in England. To register your interest, call AHDB on **024 7518 9300** or email: **farmbusinessreview@ahdb.org.uk**

Keep up-to-date with our regular Horizon blog:

ahdb.org.uk/trade-and-policy/horizon-blog



Advice for navigating farm support changes

A detailed action plan will help farm businesses prepare for the end of basic payments. **Louise Impey** reports

The phase-out of the Basic Payment Scheme (BPS) is set to have a huge impact on farm incomes across England.

After the first cuts this year, farm businesses face the loss of at least half their annual basic payment by 2024 – with the whole lot gone by 2028. The impact on farm profitability will be significant. Yet one in three farmers has done nothing to prepare for the reduction in revenue. Incomes will be down by as much as £230/ha, according to farm business consultants.

BPS funding currently represents some 58% of profit across all farm types – with sectors such as grazing livestock performing significantly worse. Efficiency gains will go some of the way to reduce the impact of these changes. But farmers hoping to replace lost BPS income with payments from the forthcoming Environmental Land Management (ELM) scheme will be disappointed.

It's not just the system that's changing, it's the amount of money too, says Richard King of consultant Andersons. "The funds being granted will fall, and claimants will have to do more to access the money that is available – so profit under these will be lower," he warns.

This means farmers wanting to stay in business should thoroughly investigate alternative income streams and expansion opportunities.

Others will need an exit strategy. "If you're up for the challenge that the next five to 10 years will bring, you need a plan to prosper through the transition period."

Starting point

To develop their plan, farmers should step back and review their business performance, says Richard Means of Ceres Rural. Benchmarking can provide a good basis for decision-making and reveal whether your business is in the top 25% of performers.

"Whether you're considering new opportunities or changes to the existing business structure, it's much easier to do this with current performance in mind," says Mr Means.

Figures show that the top-performing arable businesses are twice as profitable, he adds, with higher yields contributing far more to profitability than lower costs. "Reducing costs is a priority for most, whatever your enterprise mix, but any changes must be introduced in such a way that margins are maintained. Be cost appropriate."

With the first details on the Sustainable Farming Incentive now available, in-field practices that increase soil organic matter could earn farmers about £70/ha from next year. "They also help make soils more resilient, which >

CAN YOU REPLACE LOST INCOME?

New support schemes are being phased in as the Basic Payment Scheme is phased out. The Environmental Land Management (ELM) scheme is scheduled to be fully up and running from 2024.

It will have three levels – the entry-level Sustainable Farming Incentive is due to open next year, after a pilot launch this autumn. A mid-level local nature recovery tier will launch afterwards, with a higher-level landscape recovery tier later still. Full details are still to come – but it is clear that ELM will not fully replace lost BPS income.

Other schemes include:

- Countryside Stewardship (until 2024)
- Farming investment fund – capital grants
- Farm resilience scheme – training and advice
- Farming in protected landscapes – National Parks and areas of outstanding natural beauty
- Slurry investment scheme – capital grants for stores
- Skills and training – professional body
- Animal welfare – payments for improved standards
- New entrants scheme – support for programmes rather than individuals

GETTING OUT OF FARMING

The government plans to offer a lump sum exit scheme to farmers who want to retire from 2022. The scheme will offer farmers the chance to take a lump sum in place of any further BPS payments up to a maximum of £100,000. Those who take it must stop farming.

But only 15% of respondents to the *Farmers Weekly* “Future of farm payments” survey said they would be interested in the scheme. And consultants suggest that simple maths means it is unlikely to appeal to farms larger than 183ha.

< reduces risk, allows for lower input use and paves the way for ELM and potentially future carbon sequestration payments. It makes sense to look at this.”

Whatever adjustments need to be made, though, involving the right people is essential. “A motivated, enthusiastic team is so important where new techniques or sweeping changes are being introduced.”

Other key areas for farmers include:

1. Environmental management

Nature recovery is a requirement for future success, with environmental schemes expected to be a significant source of income, says Henry Barringer of Savills. Countryside Stewardship, which has an early break clause for ELM, is already proving an attractive guaranteed income option for the transition period. Farmers have until 2023 to introduce management options and see if they deliver – and investigate how the schemes will provide access to public money.

“Start by recording what you have on-site in terms of habitats and key species,” Mr Barringer advises. “Baseline data is helpful in understanding what you already have, allows you to target opportunities and take advantage of funding.”

Setting a gross margin target for every hectare on the farm also helps with planning. He suggests putting any land not producing a gross margin of £490/ha straight into stewardship. “Options such as AB15, SW3 and AB9 can all have a higher gross margin. They also bring huge environmental benefits and increase in-field operational efficiency.”

2. Collaboration

The transition period is a good time to explore machinery sharing and other collaborative pro-



TRANSITION FARMER: VAUGHAN HODGSON, CUMBRIA

Transition Farmer Vaughan Hodgson says the loss of BPS will hit his arable margins hard. Mr Hodgson, currently receives about £55,000 in BPS annually for 244ha of arable and grassland at Kirkbride, Wigton. But cuts totalling £67,500 over the next four years mean he will receive just £25,750 in 2024 (see table, right) and nothing at all by 2028.

His action plan includes looking at

other sources of income, including from diversification. “The Environmental Land Management scheme won’t enable us to recoup those losses,” he says. “I am really concerned that it will be too onerous.”

Payment rates under the Sustainable Farming Incentive (SFI) – the first tier of ELM – are likely to be too low to be attractive, he adds. Instead, Mr Hodgson hopes to replace lost BPS income by diversifying into renewable energy production.

PROGRESSIVE REDUCTIONS TO THE BASIC PAYMENT SCHEME

Payment band	2021	2022	2023	2024
Up to £30,000	5%	20%	35%	50%
£30,000-£50,000	10%	25%	40%	55%
£50,000-£150,000	20%	35%	50%	65%
More than £150,000	25%	40%	55%	60%

Source: Defra. Future BPS payments can be calculated at bit.ly/BPSpayments

jects with neighbouring or like-minded farmers, says Gary Markham of Land Family Business.

Most farm businesses will benefit from some form of collaboration, he says. Doing so can bring financial efficiencies and social benefits at a time when they are needed most.

“Machinery capital is one of the largest costs on arable farms – so it makes sense to be part of a machinery syndicate. Often having a share-farming agreement on the cropping is also a good idea.”

Vaughan Hodgson is concerned that ELM won't make up for lost direct payments



"We have been invited to apply for the pilot SFI, and they have announced some figures. But I am concerned about how achievable it will be and the payment rates. I think we will still be short of about half our basic payment and we won't be able to recoup the rest."

- Vaughan Hodgson is one of our Transition Farmers. You can read more about his business on **p10**

HOW £55,000 IN BPS INCOME WILL DECLINE

2020	£55,000
2021	£50,500
2022	£42,250
2023	£34,000
2024	£25,750

Source: Defra/RPA

Mr Markham believes BPS loss will force collaboration. "It comes in many guises. It's not just about making better use of machinery and labour, it can also give you access to other expertise, skills and assets. There's also the option of getting together to produce public goods at a landscape scale."

The wellbeing aspect of joining forces with others shouldn't be overlooked at a time that farmers are having to cope with unprecedented change and disruption, adds Mr Markham.

3. Diversification

Profits from diversification can be significant and make the difference between a farming business turning a profit or recording a loss, says Jonathan Armitage of Strutt & Parker. Figures show that arable farms are making as much as £120/ha from diversification, he adds.

For most farm businesses, diversification opportunities come in two forms, both of which can be exploited to grow profits and spread risk. "The first of these is creating more from existing

WHAT ABOUT NEW INCOME STREAMS?

Carbon and biodiversity offsets are being talked about for their future money-making potential, while incentives for woodland creation already exist. But there is limited scope to sell carbon sequestration at present, other than the Woodland Carbon Code.

One of the key issues is the lack of an agreed standard and methodology for calculating carbon emissions and savings from farming. "The noise is very loud, but there's not much business activity," says Jonathan Armitage of Strutt & Parker. "By all means start to explore opportunities, but also look to become carbon neutral first."

Biodiversity net gain – where habitats are created to replace those lost to development – will be good business for some and can be provided off-site but must give a 10% net gain in biodiversity value. Farmers and landowners who undertake to do that enter into long-term management agreements to provide biodiversity by creating woodlands or other wildlife habitats.

Apart from private finance, incentives for woodland creation come in two forms – government grants and carbon payments.

The new England Woodland Creation Offer from Defra looks attractive, says Helen Gosling of Ceres Rural. It has a minimum size of 1ha, higher payment rates and faster funding decisions – all better than options offered under Countryside Stewardship.

"If you're registering woodland with the Woodland Carbon Code to generate carbon credits and develop a new income stream, you must do that before planting takes place," says Ms Gosling.



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ADOBESTOCK/HELEN HOTSON

assets, such as buildings," says Mr Armitage. "The second is when diversification becomes a business in its own right."

This latter approach can take time to bring a profit and won't necessarily be a quick win, given the comparatively short timescales before BPS is phased out completely by 2028.

"Diversification isn't for everyone. You need the right skills, assets, capital or location to make it work. Where it does, the profits can be significant." ■

‘I always wanted to support my sons when they came home’

Diversification opportunities that complement the core farm business could generate valuable revenue to help pave the way to succession. **Johann Tasker** reports

A business capable of supporting the next generation is a key goal for Vaughan Hodgson, who farms 244ha of arable and grassland at Kirkbride, near Wigton, Cumbria.

Mr Hodgson farms in partnership with wife Sandra, father Geoff and mother Dorothy. His two sons – Karl, 24, and Ryan, 21 – are also involved full time with the business. Daughter Samantha is due to take her A-levels next year.

“It’s always been at the back of my mind that I would like to support my two sons when they came home,” he says. “Hopefully, we’re moving towards that – although we’ve haven’t been able to achieve it completely by farming.”

Farm enterprises include 142ha of cereals and 100ha rented-out grassland, and all land is owner-occupied. The farm also operates a poultry business, contracting and mechanical engineering business, including fabrication.

There are two broiler sheds, each with 60,000 birds on six cycles a year. The birds go to a local processor. Planning permission for a third shed has been granted, but Mr Hodgson has not yet put the plan in action as the sector was hit badly by the Covid pandemic.

Action plan

The farm currently receives a basic payment of about £55,000. Phasing out the Basic Payment Scheme over the next seven years will put pressure on arable margins, says Mr Hodgson. His action plan includes examining ways to replace the lost income.

Mechanical engineering and fabrication is son Ryan’s strength. An expanding business, it generates much-needed income and complements the arable enterprises – servicing machinery for the farm as well as for local contractors.

Eldest son Karl concentrates on contracting – including a self-propelled McConnel sprayer covering up to 9000ha annually,

FARM FACTS

JG & DE Hodgson, Kirkbride, Cumbria

- Farm size: 244ha
- Enterprises: 142ha cereals, 100ha grassland, 120,000 broilers
- Annual rainfall: 1,250mm
- Soil: heavy red clay, silty sand, black peat

Again, it generates additional revenue and means the farm can run a bigger machine than it would otherwise justify.

Mr Hodgson says he has spent the past 10 years using his basic payment to expand the farm and help repay a land purchase made a decade ago. Now the loan has been repaid, he is looking for other opportunities.

Natural progression

“We concentrated on paying that down – especially when we became aware that BPS was going to be removed. We’ve achieved that goal in the sense that we are now free of any borrowings.

“We like to do a mix of things. I wouldn’t call it diversification as such – it is more a natural progression that stems from the core farm business. We are very farming orientated, but we are aware that we still haven’t fully diversified.”

Top of the list is a renewable energy project. “We feel a little bit behind the curve because technology is moving forward all the time. So we are investigating a range of options – I’m open-minded. It might be solar, wind

or anaerobic digestion – or a mix of all three.”

An anaerobic digestion plant would probably have bigger benefits, says Mr Hodgson. But it would require a larger investment and a longer payback period. “Whatever we choose, it must pay for itself, be reliable and help achieve the climate change goals everyone wants.”

Building resilience

Mr Hodgson also hopes to make the farm more resilient to increasingly unpredictable weather. It is in one of the wettest parts of the country, and the 1,250mm of annual rainfall does not arrive evenly through the year. “We had three or four absolute downpours last August and September – our rape had established well and looked fantastic, but the fields flooded and it hit yields.

“People talk about changing their cultivation strategy, choosing different varieties or tweaking their rotation. But if you get 50mm of rain when your crops are establishing, it just rots the seed. It’s difficult to mitigate something like that.

“The ultimate goal is to have a profitable business that works in harmony with the environment – not against it.” ■

TRANSITION GOALS

- Supporting the next generation
- Replacing lost BPS income
- Adapting to uncertain weather



ANGUS FINDLAY

Grass and forage: a strategic, sustainable choice for UK farmers

Versatile and valuable, grass has an important role to play

At Barenbrug, we've one simple goal: to help all farmers make the most of grass and forage – and that applies across the board, whether you're producing milk, raising livestock or growing essential crops.

Grass' primary value will always be as a fantastic feedstuff in truly sustainable livestock production, but now that we're realising and quantifying its myriad benefits – soil health and conservation, carbon storage, nutrient management and more – it's increasingly seen as of critical importance to farming enterprises of all flavours.

Take the herbal ley, for example. Becoming something of a buzz word in many farming circles this year, we firmly believe it has a home in every farming system. Visitors to Groundswell, the regenerative agriculture event, were met with trial plots from many exhibitors, including Barenbrug. As one of the show's sponsors, we ourselves seized the opportunity to demonstrate the intrinsic value of the herbal ley. Business development manager Roger Bacon explains.

"This complex seed mixture of grass, legumes and herbs has been a long-established practice in organic systems, but it's now begun to attract attention within conventional circles.

"Whether you're growing crops, producing milk or fattening lambs and cattle, herbal leys bring significant benefits such as drought resistance, better soil health and improvements in soil structure."

Research shows that they can reduce the requirements for artificial nitrogen fertiliser, while boosting levels of the essential major and trace elements needed for good crop and animal health.



Grassland of any sort also sequesters carbon, more reliably and more safely than forests. Studies reveal that the stocks of carbon in grassland, located in roots and soil, are 150% greater than those of forests. Interestingly, evidence suggests that this storage capacity may increase further as global warming brings higher temperatures, and carbon dioxide concentrations increase.

But it doesn't stop there. Soil carbon is directly linked to soil organic matter. Farming systems with higher soil carbon levels can not only grow healthier crops, but also increase the biodiversity of soil ecosystems – in turn improving the diversity above ground. And the ability of grassland, and soil with high organic matter, to improve water-holding capacity – thus reducing flood risk – is now more widely understood.

"With all these benefits, it seems increasingly likely that grassland of any sort, but especially 'active' forms such as herbal leys, will be seen as a 'public good' thanks to their effects on the soil, ability to sequester carbon, and their value for biodiversity," says Roger.

The rise of the herbal ley has also led to more and more farmers rediscovering the value of diverse, mixed farming systems that include both livestock and arable elements.

"Growers are reporting yield lifts of more than 5% when cereals follow a herbal ley, despite being able to cut nitrogen inputs by nearly a quarter in some cases," points out Mhairi Dawson, Barenbrug's R&D manager.

"That's on top of more basic agronomic benefits from bringing back grass into the rotation, such as being able to get on top of problem weeds like black-grass," she adds. "AHDB work showed that planting a sward, allowing black-grass to germinate and then cutting it before the seed sets, could reduce seed burdens by up to 90% over a couple of years."

There are also opportunities that don't involve livestock, useful for those in areas of the country where livestock is less common. "There are many environmental schemes that favour the planting of grass, for example, as well as energy crops or selling harvested grass off-farm to livestock producers.

"The great benefit of grass and forage is that there are so many species, and varieties within species, that means there really is a solution for everyone."

Barenbrug's UK-focused grass breeding programme allows us to provide the UK's farmers with not only the genetics but also much-needed advice and insight that can bring the value of grass to every farm.

‘Success is about making the most of all our assets’

Rutland farmer James MacCartney is determined to get the most from his farm business. **Johann Tasker** reports

Transition Farmer James MacCartney says the size of his farm is the main challenge he faces in his quest to secure a sustainable future for his business.

A third-generation beef and sheep producer, Mr MacCartney farms in partnership with his mother, Lesley, and sister, Abigail, at Flitteriss Park Farm, Braunston, near Oakham in Rutland.

The 160ha farm is home to 600 breeding ewes and 150 cattle, which are purchased as calves and then fattened. With his wife Peta due to give birth to their first baby this autumn, Mr MacCartney says he needs a better return from the business.

Having studied for a degree in rural land management at the Royal Agricultural University, Cirencester, Mr MacCartney returned home and took on responsibility for the family's sheep and beef enterprises 10 years ago.

“My goal is to have a business that is profitable. That means making what we do way more productive. It's not enough for our enterprises just to be washing their own faces – we need to be much better than that.”

Firm in his belief that financial and environmental sustainability are tightly linked, Mr MacCartney says you can't have one without

the other. “It's about getting the balance right – that's what we are striving to achieve.”

Mindful that increasing the farm size is easier said than done, Mr MacCartney is instead focusing his efforts on making every asset earn its keep. This includes the core farm enterprises, farm diversifications, and surrounding countryside.



The flock will be expanded for breeding once the farm has joined the MV-free accreditation scheme

Disease management

“The challenge for both our livestock enterprises is disease management,” he explains. “We are tackling it on a daily basis and it has improved dramatically over recent years. But there is still room for improvement.”

Having experienced bovine TB in the past, the farm has switched from purchasing cattle through an auction mart to sourcing calves direct from two local dairy farms at four weeks old, and then fattening them.

“It means we are able to choose exactly the calves we want and it is working really well for us,” he says. “The calves stay on the farm their whole life.”

Sheep are proving more tricky. Mr MacCartney would like to expand the flock to 1,200 ewes because the farm is understocked. But productivity is being limited by the presence of maedi visna (MV), a viral disease for which there is no cure or vaccine.

A strict testing and culling regime has been introduced to get on top of the problem. Once it is complete, Mr MacCartney hopes to join the MV-free accreditation scheme. He will then expand the flock, and start breeding and selling his own replacements.

farm business is key, but “personally I am aiming for more than that”, he adds.

As part of this quest, this year Mr MacCartney has embarked on a Nuffield Farming Scholarship. It will see him investigate how UK red meat producers can win the battle for environmental sustainability in the minds of British consumers.

Covid restrictions permitting, the study tour will include a visit to the US, where he hopes to learn from the “mistakes” of feedlot-style beef production, and to New Zealand, where he will look at sheep production.

“As an industry, I believe it is important to focus on ways we can make sure the improvements we make satisfy the concerns of the consumer – that UK red meat is an environmentally sustainable product,” he says.

Pumpkins and sunflowers

Alongside the main enterprises, the farm has diversified into holiday accommodation and outside catering. Sister Abigail has her own farm

business, Livelab – an independent testing facility providing services to the agricultural sector.

More recently, the farm has embarked on a successful pick-your-own pumpkin enterprise, and is now growing sunflowers, too.

“We grew 8,000 pumpkins last year, and sold them all in four days. Peta did all the marketing by social media. We had to turn away 2,500 people because we sold out – so we’re doubling the area this year.”

“As well as picking them, people were coming to have their photos taken with the pumpkins so they could post pictures on Instagram. The local countryside in a photo is a real asset for us that people in towns don’t have and we want to make the most of it.

“We hope to get a temporary alcohol licence so people can come and enjoy a picnic when the sunflowers are in bloom. The idea is for prosecco and local beers on picnic benches in one of the fields in front, with sunflowers as a backdrop. It’s about making the most of all our assets.” ■

FARM FACTS

Flitteriss Park Farm, Braunston, Oakham, Rutland

- Farm size: 160ha
- Annual rainfall: 720mm
- Soil type: Heavy clay

TRANSITION GOALS

- Reducing carbon footprint
- Reaching disease-free status
- Establishing herbal leys

Herbal leys

Better herbal leys are another challenge. The farm is in Countryside Stewardship and has twice sown GS4 legume and herb-rich swards. But establishment is proving difficult. The first ley failed and is patchy at best second time round.

“We have not managed to do this as successfully as I would like. It’s one of our stewardship options and we want to continue growing in the future, but we have really struggled to get it established,” says Mr MacCartney.

Herbal leys could be a big benefit – but only if they work, he adds. They would boost the productivity of both the beef and sheep enterprises, while improving soil structure and water infiltration.

“For the past two years, we have had to redrill the same field. I am not convinced it is completely practical on our farm,” he says. “We are on very heavy land and most of it needs lime – a lot of the legume species prefer neutral to alkaline soils.”

Better than net zero

Success with herbal leys would also help Mr MacCartney reach his overall goal of being “better than net zero”. The sustainability of any

Rebecca Davenport, veterinary surgeon, Rutland Veterinary Centre

Buying in calves from a single source can be difficult – but it has improved animal health and welfare on the farm. It has massively helped to reduce antibiotics use, mainly for cases of pneumonia on James’s farm.

There is always room for improvement. Vaccinating all bought-in livestock – both on arrival and as they go through the system – has helped to prevent a lot of diseases and we’ve seen better weight gain.

The biggest challenge is the maedi visna status of sheep. The difficulty is that you often can’t see it until later on. We are screening for the disease, isolating infected stock and culling them out while keeping clean stock separate.

We conduct an annual farm health review – but we are also in constant contact, either over the phone or via WhatsApp, rather than relying on a single meeting once a year. It means we are able to pre-empt a lot of problems.

Ben Wixey, grassland adviser, Germinal

Herbal leys have many advantages – but they can be difficult to establish. They are good for ruminants, and their anthelmintic properties can reduce worm burdens in livestock. Liveweight gain in younger animals can be particularly impressive.



Legumes help fix nitrogen, and the mix of different rooting plants benefits soil structure. And from an environmental point of view, flowering plants provide both a habitat and food source for invertebrates and pollinators.

Ley multispecies need to be carefully established. Plants are not as aggressive as modern perennials, and you must have the right conditions. Some seeds, such as yarrow, are so fine they are almost a dust.

The seed-bed must be fine, and you need good soil-to-seed contact. The soil must be warm and needs to be above pH6. You need good moisture at drilling time and often throughout the establishment phase.

Liz Genever, beef and sheep consultant

Discussion groups are a good way to exchange knowledge. Talking to other farmers means you can pick up ideas you haven’t thought of.

The Welland group James belongs to is a great example because everyone knows each other. The challenge for me is to keep pushing it on as a business development group – encouraging them to share performance figures, not just be social.

Technical efficiencies can be made on every farm. It’s about prioritising where to pitch your efforts – the two or three things you can achieve that year, rather than trying to do everything at once.

It’s about positive change and being confident about the information shared. There are lots of ways to motivate people. But the end goal is all the same – where are you now and where do you need to be?



THE JOURNEY TO PROFITABLE, SUSTAINABLE FARMING CONTINUES.

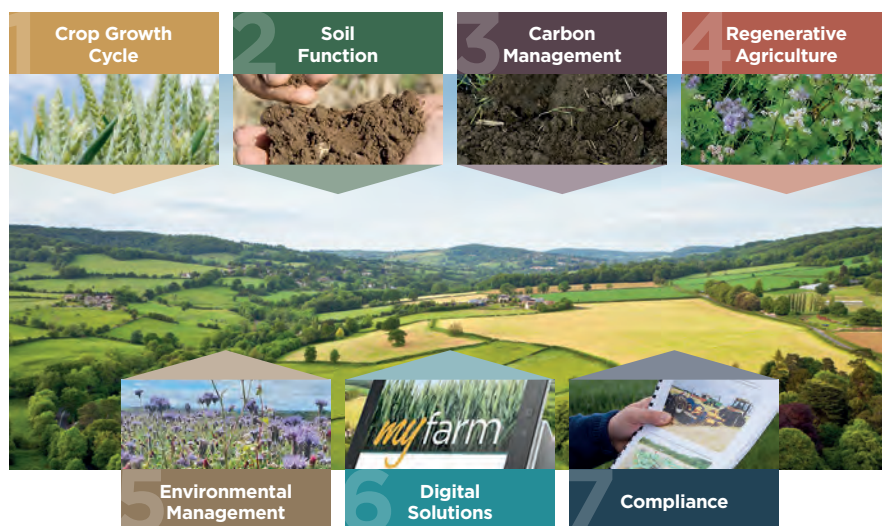


Take 7 steps to a sustainable future.

New farm policy means that environmental responsibility and commitment to sustainable crop production are more important than ever.

However, sustainability can mean different things on different farms and with changes to farm subsidies and future legislation leading to a new era of 'payments by results', it's vital that UK farmers have access to the right support and advice to deliver and evidence results.

Taking a holistic approach to farm management is therefore key and to help, Frontier's sustainability team has created a practical model of seven focus areas.



Each area is backed by the knowledge of our experts, underpinned by research, specialist services and advice that can be tailored to your business. No matter where you are on your journey to a more sustainable future, we can help you implement the crop production strategies that are right for your farm business.

- 1 Help with product selection, genetic and biological solutions and nutrition programmes.
- 2 Delve deep into your soils with specialist analyses from our Soil Life service.
- 3 Soil carbon benchmarking, auditing and farm-scale research.
- 4 Investigate alternative cropping and integrated pest management strategies.
- 5 Expert advice from Kings Crops on natural capital management, agri-environment projects, SFIs and ELMs, soil health, stewardship and conservation.
- 6 Comprehensive digital tools for every aspect of your sustainability journey. SOYL precision targets and optimises inputs; while MyFarm records, measures and manages farm performance.
- 7 Support with legislation, farm assurance, stewardship and the compilation of farm policies to evidence your work.





How to make arable rotations more resilient

Redesigning arable rotations to provide economic and environmental returns is a challenge. **Louise Impey** looks at how it can be done

Rotation planning for the next few years should start with the acknowledgement that nothing is cast in stone anymore, say agronomists and consultants.

After two consecutive wet autumns and dry springs, growers have accepted the need to be flexible and are already running a more fluid winter/spring cropping programme, often with some integration of stewardship.

The next few years are expected to see a continuing shift to longer rotations featuring more straw crops, less oilseed rape and the introduction of temporary leys or environmental fallows. Catch and cover crops will also feature, to help with soil structure and nutrient cycling, in line with the need for delivering environmental benefits.

Crop options

“For financial reward, winter wheat should be the mainstay at 50% of the rotation, but there’s a growing acceptance that there has to be an element of spring cropping,” says Patrick Stephenson, northern regional agronomist with Niab Tag. “And the challenge with that is getting consistent performance from it.”

With spring cropping comes the opportunity to include a cover crop and get good grassweed

control, he notes, with the greater cultural benefits being seen with later spring drilling dates. “Where grassweed control is an aim, you need to use as little soil disturbance as possible at drilling. Cultivating in the autumn and winter for spring crops, if it’s dry, is often a better option.”

Break crops present another performance challenge, with confidence levels falling in the past few seasons as their weather vulnerability was exposed. “There is still an opportunity for oilseed rape, but it needs to be grown less often – on a one-in-six or eight basis. With that in mind, you need another break as well, which is where beans have a place.”

From a margin viewpoint, the two weakest crop links are beans and oilseed rape, says Jock Willmott of Ceres Rural. Both crops have suffered in recent years and failed to give the consistent performance required.

“They do fulfil other aims,” he says. “Oilseed rape gives you a proper break and early entry for the following crop, while beans offer an inherent fertility benefit. Keeping wider gaps between these crops and growing smaller areas of them are ways of keeping them in the system.”

However, he believes that oilseed rape needs to be giving yields of 3.5-4t/ha to earn its place.

Oats have worked well for many, but should >

STEWARDSHIP PLANS

Stewardship options in England should be in the mix at the planning stage, especially now that Defra has confirmed a 30% uplift in payment rates compared with income foregone.

“It makes them even more attractive,” says Niab Tag’s Patrick Stephenson. “The winter bird food option AB9, for example, currently pays £640/ha and can be followed by spring barley.”

Two-year whole-field options such as AB15 can be used to reduce risk, provide a guaranteed income and increase environmental delivery – without being affected by the weather.

“The introduction of a one-year fallow option would be ideal,” he adds. “Getting a two-year option to fit, both practically and physically, can be tricky.”



ROTATIONAL PLANNING KEY POINTS

- Try to net more than £800/ha
- Aim for 50% winter wheat
- Beans and oilseed rape are underperforming
- Look for opportunities to cultivate less
- Consider flexible stewardship options
- Assess agronomic, economic and environmental benefits
- Consider workload implications

◀ only be grown as a spring crop where blackgrass populations are bad, while linseed is a crop that needs experience, says Mr Stephenson.

Grass can also be an important part of the rotation, but only if you can use it as part of the farm's productivity. "It returns organic matter to the soil but becomes a cash loser if it can't be used."

Financial considerations

Against this background, the top-performing arable farms achieved a gross margin of more than £900/ha for most crops they grew in 2020, according to AHDB Farmbench figures.

Data shows that a £600/ha gap has opened up between the best and the worst performers, with the farms in the top 25% having a further advantage in lower fixed costs.

With the phase-out of the Basic Payment Scheme in England, finding ways to maintain that level of financial performance is key – with a target of achieving an average gross margin of £800/ha across the whole rotation. Where break crops aren't working, an alternative is to look at a rotational environmental option, such as the extended overwinter stubble AB6, to do the same job, suggests Mr Willmott.

While the payment rate of £480/ha may not meet the £800/ha target, it does bring a benefit to the farm and means you have some land which doesn't require the same level of inputs or management. "For financial reasons, the aim is to have at least 50% winter wheat. For sustainability reasons, it's desirable to have two break crops," he says.

Mr Willmott outlines two different ways of achieving this – one of which goes much further in providing the diversity that is likely to be required once the Environmental Land Management scheme has been rolled out (see "Stewardship plans").

"For an average gross margin of £785/ha, you could grow winter wheat in years one and two, followed by an extended overwinter stubble option in year three. It means one-third of your rotation doesn't do much, but you do have to question how sustainable it is."

The alternative is a six-year rotation which gives the option to include spring and cover crops, along with three winter wheat crops, and has an average gross margin of only slightly less, at £775/ha. "By starting in year one with overwinter stubble, you have clean ground to go into winter oats in year two, followed by winter wheat, and then beans in years three and four.

TRANSITION FARMER: ALAN STEVEN, FIFE, SCOTLAND



ANGUS FINDLAY

Transition Farmer Alan Steven is lengthening the rotation on contract-farmed land to make it more resilient to weeds and disease.

Mr Steven grows potatoes, parsnips, Brussels sprouts and cereals at Kingsbarns, near St Andrews, Fife. He likes to keep a balanced seven-year rotation but took on 50ha of contracted land on a four-year rotation six years ago.

"It was growing oilseed rape but the rotation was slightly tight," he explains. "We were still getting good yields but the four-year rotation was winter barley, oilseed rape, winter wheat, winter oats. It was going to start running into problems with disease and volunteers so we stopped growing oilseed rape last year.

"Everything was autumn cropped – which in some ways helped the workload

and gave us an early start to harvest. It meant the barley, rape and oats were all done and dusted fairly quickly, with rape stubble cultivated and waiting to sow wheat in it by September."

Five-year rotation

Having dropped oilseed rape, Mr Steven says he will now stretch the rotation to five years and introduce cover crops before potatoes and Brussels sprouts.

The next five years could see a rotation of spring barley, potatoes, winter wheat, winter oats, Brussels sprouts. "Then we will take a break because we don't grow potatoes in less than one in six years."

- Alan Steven is one of our Transition Farmers. You can read more about his farm business on **p22**

Years five and six would both be wheat, with both the beans and the second wheat giving the option of being spring drilled."

That also gives an opportunity to use cover crops ahead of spring plantings. With this in place, and as the transition period progresses, machinery can be kept for longer. "You won't be

using it as hard," he says.

Other considerations include the effects of dropping oilseed rape on workloads. "Without it, you are flat out when harvest comes along. It's also very hard to justify having winter barley in the rotation where you aren't growing oilseed rape." ■

ROTATIONAL OPTIONS FOR ENGLAND

	Option one	Option two
Year 1	Winter wheat	AB6 Enhanced OWS
Year 2	Winter wheat	Winter oats
Year 3	AB6 Enhanced OWS	Winter wheat
Year 4		Beans
Year 5		Winter wheat
Year 6		Winter or spring wheat
Average gross margin	£785/ha	£775/ha

PARTNER PERSPECTIVE



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KWS. YOUR PARTNER FOR A PROFITABLE FUTURE

As a leading and independent seed specialist globally, KWS strives to offer farmers worldwide innovative solutions for profitable and sustainable agriculture. We achieve this by being a true partner to farmers through innovative breeding methods, top digital consultancy via myKWS and a diverse portfolio where genetics and plant protection products are optimised to boost yields and deliver sustainable crop production.

What does this mean for UK farmers?

Sowing for Peak Performance

Sowing for Peak Performance (SPP) is KWS's fundamental breeding objective that underpins all cereal genetic development now and into the future.

It's based on the premise that 80% of your crop's potential is locked in by the seed you buy and sow. Whilst of course, you can fine-tune this with the correct Nitrogen levels, using fungicides wisely to protect it from disease, and paying attention to basic management principles but once you've made your variety choice, your production potential is largely set.

So to get the best performance on your farm it is critical that when you choose your variety, you are using a wealth of data to tailor your choice for both your farm and individual field situation.

Working with businesses across the agri-supply chain, we've identified five key needs that growers must address if they are to keep their business profitable and environmentally

sustainable in the years ahead. Each of these carries a commitment from KWS to ensure our genetics address these as far as possible.

5 key requirements for profitable and sustainable UK crops and how SPP can help now and in the future:

- 1. To maximise production/profitability from available resources**
 - Getting the most production from the resources you have available to you is the key to being sustainable.
 - KWS provide a range of high yielding varieties with an assortment of specific agronomic traits. Select your variety based on your soil type, growing conditions, locality to market and maximise your yields.
- 2. To achieve effective crop management with reduced windows of opportunity**
 - Climate change has become a reality for many growers over the last few years with growing conditions not just varying dramatically between the years but also within the same season itself.
 - KWS actively select for high resilience so that they can help on-farm, spreading workloads at critical times and buying you time. Note that varieties outside of your different market segments may be used to widen spray windows and harvest timings.
- 3. To achieve optimum crop health without a high level of agronomic interventions**
 - Striving to breed varieties with high levels

of resistance to the most damaging diseases has been a key KWS aim for many years. Our current portfolio is strong proof of this with some of the highest scores for untreated yields, resistance to Septoria, Mildew, and Rusts on the RL.

- But if growing a less resistant type for a specific market requirement, adapt your management practices to boost disease resistance e.g. later drilling of wheats will increase Septoria resistance scores.
- 4. To reduce amount of all inputs used and associated costs**
 - It's not just about cutting fungicide spend; by choosing the right variety, you could save more on labour, diesel and machinery wear and tear and, ultimately, replacement.
 - 5. To get greater productivity from soils long-term**
 - Less travel means less potential damage to soils and less time and money spent trying to correct the compaction problems associated with multiple wheelings and carrying out operations in unsuitable conditions.
 - From considering how varieties can perform in direct drilled situations through to those that are stiff strawed, variety selection can be tailored to your farm.

By using KWS's SPP ethos, growers can be assured that proactive variety choice will fix 80% of your crop performance. This will pay off, both in cost and time, at time of sowing, during the growing season, and through to harvest.



Making the most of the transition

Farmers' financial positions will change markedly as the Basic Payment Scheme is withdrawn and the Environmental Land Management Scheme develops. But with change comes opportunity: so how should farmers prepare?

AT FIRST READING, the figures are stark: Depending on the type of farm, BPS makes up a considerable proportion of net farm income. For example, 74% of average net farm income on cereals farms is from BPS. Take it away, and many farmers are facing a loss. But there are things which can be done to prepare for the changes ahead, not least of which is understanding the financial position of the farm.

"By budgeting and cash flow forecasting farmers can understand the real impact of BPS withdrawal," explains Tim Coates, arable farmer and co-founder of agricultural bank, Oxbury. "It might be a bit daunting, but having a clear picture of the years ahead means they can then work with trusted partners to come up with a solid and successful plan."

Now is the time for all farmers to look at internal and external factors affecting their business in the coming years – and get the next generation involved, as they will likely bring a fresh perspective. Considerations include assets, contracts, labour, inputs, overheads, diversification and joint ventures. Other factors might be climate change mitigation, environmental schemes, biodiversity net gain, ecosystem services provision and external financing.

Trusted partners

By analysing their business in this way, farmers can then decide on the best route forward – whether that's improving

efficiencies by adopting new technology, diversifying, joining forces to reduce overheads or scaling back to add value through increased margin. "Whatever you decide to do, make sure it's something that people involved in the business will enjoy and will be committed to," says Mr Coates. "And it's best to plan and implement it in partnership with advisers you trust, whether that's a farm consultant, accountant or bank. This will avoid unexpected financial implications and ensure you have appropriate and specialised lending in place."

For example, long-term capital projects like diversification, renewable energy or productivity enhancements will likely require an Oxbury Farm Loan which can be paid back over up to 25 years. "It's important that your lender really understands your needs so as to construct the most effective package – that might be a larger or longer-term loan to allow flexibility," he explains. "Other considerations include choosing between fixed or variable rates, interest-only terms, or repayments that match the seasonality and needs of your business."

Be prepared

Cash is king: Budgets should always include a cash flow forecast to identify pinch points, says Mr Coates. "Being prepared and having a bank and relationship manager who truly understands your business means you're more likely to obtain attractive lending rates

Oxbury is a new agricultural bank with specialist relationship managers and bespoke products designed to meet farmers' needs both now and in the future. Most of our staff have farming backgrounds so are fully invested in helping farmers to make a successful transition, securing a profitable and sustainable future for British agriculture.

– don't leave it until the last minute and rely on your overdraft limit."

Oxbury works with a range of agricultural partners, like Frontier, Hutchinsons and Wynnstay, among others, to offer flexible farm credit on inputs like feed, seed and fertiliser, through Oxbury Farm Credit. "You can buy inputs when you need them and pay when it suits your cash flow," explains Mr Coates. "With everything monitored on our online platform you're in complete control."

Dairy farmers can also borrow up to 70% of their quarterly milk payments through Oxbury Flexi Credit, providing the ability to immediately draw down as required and payback to suit cashflow.

"We truly understand farmers' needs, opportunities and challenges," says Mr Coates. "With the right support, farmers can come through the Agricultural Transition stronger and more resilient, and we are committed to investing in their profitable and sustainable future."

To finance your farms' transition visit www.oxbury.com



Can an all-forage diet be practical and profitable?

The benefits of producing more milk from forage are well established. **Judith Tooth** looks at the feasibility and financial rewards of switching to an all-forage diet

At about 3,250 litres annually, cows fed wholly on forage produce much less milk than dairy herds on diets including concentrates. But producers who have made the switch say other significant benefits more than make up for it.

"I can hear you thinking, how are we going to make a profit from that?" says Pasture-Fed Livestock Association (PFLA) certification committee member Mike Tame. "But those animals producing that level of milk are under much less stress than high-yielding dairy cows."

Herd comparisons

The PFLA champions farming systems where livestock eat only grass and forage their entire life. Lower input costs more than offset yield losses from grass-based systems, it says.

In 2017-18, the organisation tracked the performance of three PFLA-accredited herds, each with 300 or more cows. It compared the results with typical industry figures for conventional herds.

While milk yields were much lower, so were vet costs, at £17/year compared with £80/year.

Replacement rates were lower too, at 12% compared with 27%. And conception to first service for these herds was 85%, compared with about 50% – thought to be due to lower demands on the cows.

Further research by the PFLA put the margin for conventional herds at £1,108 a cow a year, and the Pasture for Life herds at £1,241, says Dr Tame.

As a result of lower yields, and improved fibre digestion because of a more stable rumen pH, milk quality from these herds averaged more than 5% butterfat and more than 4.5% protein.

"So, these cost savings and the improvement in milk quality do compensate for that very much lower milk yield," he adds.

Making the switch

First-generation dairy farmer Angus Dalton and his family run a spring block-calving herd of 500 Jersey cows on their Staffordshire farm, milking them once a day.

Mr Dalton's "lightbulb moment" as a conventional dairy farmer came when he heard New Zealand cow nutrition expert John Roche >

WHY THE RUMEN WORKS BEST WHEN DIGESTING FORAGE

Rumen function is pH-dependent, and the optimum pH for digestion of fibre is around 6.5-6.8. If the pH starts to drop, digestion slows. At 6, it's significantly slower, and at 5.6 or lower it effectively stops. "You don't want this at all, as fibrous materials are by far the cheapest feed source for ruminants," says the Pasture-Fed Livestock Association's Mike Tame.

For animals fed 100% fibre, pH will vary a little depending on what the animal has eaten, the sugar content of the grasses, and how often it eats, but it will stay at around 6.5-6.8 for most of the day.

The situation is very different for a typical total mixed ration for high-yielding dairy cows made up of 20% of the DM from grass silage, 20% DM from maize silage, 35% DM from cereals, and 10% additional carbohydrates from soya, peas or beans, he says.

Within a very short time of eating, the pH will begin to fall, because the rumen micro-organisms will digest the starch very quickly, producing volatile fatty acids such as acetic, propionic and butyric acids.

Dr Tame cited a paper published in *Dairy Science* where animals on this type of diet had a pH of below 6 for about 11 hours. "For almost half the day, digestion of fibre was significantly slowed. Worse than that, the pH was below 5.6 for around four hours, when there would be little or no digestion.

"The result of this is relatively poor milk quality, with butterfat of 3.8-4% at best, and protein of 3-3.2%."

TRANSITION FARMERS: RACHEL AND RICHARD RISDON, DEVON



Devon dairy farmers Rachel and Richard Risdon operate a grass-based system – and top up with cake when necessary, focusing on having cows out grazing from calving in February until late November.

The 300-strong spring calving Friesian cross Jersey herd is rotationally grazed at Brampford Speke, north of Exeter. Cows yield about 4,900 litres and 452kg of milk solids from about 650kg of concentrate.

“We try to fully feed the cows off grass,” says Mrs Risdon, who is also a farm vet.

“But when grass growth isn’t keeping up with what the cows are eating, we feed a bit more cake – although we try to keep concentrate feeding low.

“It is something of a debate – we’re advised to aim for a 500kg cow doing 500kg of milk solids from 500kg of cake. But my key goal as a vet is to reduce costs by keeping cows healthy and fertile – which means doing everything well.

“The grass-based system is mainly ryegrass with as much clover as possible

without causing bloat issues. We focus on grazing to tight residuals – generally a fresh paddock almost every day. We measure the grass weekly, calculate how much grass is growing compared with how much the cows need to eat, and then fill in the gaps accordingly with cake and/or silage.”

● Rachel and Richard Risdon are two of our Transition Farmers, and we’ll be following their journey throughout the Transition series

EMILY FLEUR

< explain that the higher the percentage of grass in the diet, the higher the profitability.

Mr Dalton subsequently reduced concentrate feed intake and put in infrastructure for cows to graze.

“The costs fell away – and not £2,000 here and there, but £80,000-£90,000 year on year,” he said at June’s Groundswell event. “It was mind-blowing.”

Four years ago, when the farm tenancy was renewed, part of the agreement involved investment in a new parlour. Concentrate feeders were not installed initially, as they would not be needed until the following spring, but the cows got through without them, convincing the Daltons to switch to a 100% grass-fed system.

What sort of forage?

Some forage types are more digestible than others, according to Dr Tame.

While the nutritional value of ryegrasses is greatest at the three-leaf stage, the decline in digestibility of diverse swards becomes slower through growing season, he says. This is because different species reach their peak nutritional value at different points in the season, and because some of them are inherently more digestible.

Diverse swards also:

- Have a higher protein content
- Are more drought tolerant
- Have greater disease resistance
- Have a higher trace mineral content.

Dry matter (DM) intake is also higher. “Cows work their tongues around what is in front of them, so the denser the sward is, the more they take in,” says Dr Tame. “Drilled ryegrass swards tend to have quite a space between each plant, so the two swards at the same height will be quite different in terms of plant density.”

Health benefits

The fatty acid profile of milk varies with diet, season, management and breed, says Hannah Davis, lecturer in ruminant nutrition and pasture management at Newcastle University. Her research found higher levels of omega-3 fatty acids and a better ratio of omega-3 to omega-6 fatty acids in 100% grass-fed milk, compared with regular supermarket milk.

She says: “UK diets contain too much saturated fat and not enough polyunsaturated fatty acids, specifically not enough omega-3 fatty acids, especially when compared with omega-6 fatty acids.”

The UK doesn’t currently have a premium for meeting certain nutritional standards in milk, unlike, for example, the US, where the Organic Valley Co-op “grassmilk” standard offers farmers 15% above the organic price for meeting nutritional standards. ■



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MISCANTHUS: SUSTAINABLE AND REGENERATIVE FARMING FOR THE FUTURE

Reducing atmospheric carbon, enriching our soils, building biodiversity and developing sustainable fossil alternatives in a way that's scalable is a vast opportunity for agriculture and industry.

How can Miscanthus contribute?

Miscanthus is a crucial component in a broad mix of sustainable solutions, to help to alleviate some of the key issues facing farming and the requirement for zero carbon feedstocks for industry to meet our climate change commitments.

Miscanthus can thrive on marginal land and low-quality soils, reducing pressure over land use for crops, conflicts over food versus fuel, and can help to revive soils.

The Terravesta vision will see the rapid development of new Miscanthus supply chains, bespoke varieties and technologies for different climates and markets, replacing fossil-derived fuels and products on a grand scale.

Five pillars for success

1. Soil & water health

Scientific studies demonstrate a positive impact of Miscanthus in restoring soil health and fertility through increasing soil carbon and organic matter naturally, restoring soil life, particularly invertebrates, including earthworms, insects, soil-based organisms and micro-organisms. It reverses the severe soil degradation of intensive food production systems which will enable more sustainable, less depleting and lower cost agricultural regimes in future.

Miscanthus receives little or no cultivation in its 20+ year life span. Its root structure stabilises

and feeds soils, as well as slowing flooding, thereby preventing soil runoff and subsequent sedimentation into our critical waterways. Flooding has no detriment to the crop. Research shows that it not only thrives on waterlogged land, it also helps to stabilise flooded soils, slow water flow and soil erosion.

2. Carbon storage

The first dedicated, independent, peer-reviewed study into the Miscanthus carbon life cycle shows that the crop is net carbon negative, capturing net 0.64 tonnes of carbon (2.35 tonnes CO₂e) per hectare, per year in the soil at the very least. As innovations in bioenergy with carbon capture and storage (BECCS) become a reality, Miscanthus can play a significant role in CO₂ reduction, with the above-ground biomass being capable of absorbing 26 tonnes CO₂e per hectare per year.

3. Biodiversity

Minimal chemical application, zero fertiliser, no cultivation over a long period of time and ample leaf litter generated by the crop encourages biodiversity, providing habitat for a wide range of wildlife, including invertebrates, mammals, and birds. Studies have shown invertebrates to have higher species diversity and abundance in Miscanthus fields when compared with existing arable crops. Miscanthus field margins contain a rich diversity of flowers not seen in arable crops, with the crop also presenting a habitat for a wide variety of pollinating insects.

4. Food production

The Climate Change committee's report on Land Use Policies for Net Zero identified 0.7 million hectares available within the UK to create a sustainable biomass feedstock from perennial

biomass crops, which would not pose a risk to food production.

When unproductive land is taken out of food production, farmers see increased yields and margins on their productive crops, because they are not investing time and inputs into unproductive fields, meaning they can concentrate their efforts on the better land.

5. Products and markets

The now highly competitive cost of sustainable energy has stimulated the development of renewables, such as bioenergy, and the subsequent rapid growth of a global plant-based bioeconomy.

Miscanthus is central to the global bioeconomy, being a core feedstock into existing markets for large-scale heat and power generation. Second-generation markets such as biorefining similarly value Miscanthus for advanced end-uses, including degradable bio-plastics, pharmaceuticals, bio-ethanol and biogas production.

Other energy intensive industries that are actively transitioning towards low carbon similarly value Miscanthus as a substitute to traditional materials, due to its fibrous properties which are already being successfully used in construction, packaging and furniture making.

The opportunity is now...

Terravesta's personal net zero commitment

Terravesta has pledged to reach net zero by 2040, by committing to the UNFCCC's international Race to Zero campaign and is partnering with the Transition initiative to help farmers to make informed choices about growing Miscanthus - a regenerative and profitable option.

‘Where we are, it is very easy to spend £500 on haulage’

Targeting local markets can improve farm business performance. **Johann Tasker** reports



FARM FACTS

Hillhead Farm,
Kingsbarns,
St Andrews, Fife
● Farm size: 138ha
● Annual rainfall:
710mm
● Soil type: loam

TRANSITION GOALS

- Reducing cultivations
- Improving soil health
- More resilient rotations

Growing premium crops for local markets is helping Fife farmer Alan Steven optimise margins at Hillhead Farm, Kingsbarns, St Andrews.

“Our location means haulage is a significant factor,” says Mr Steven, who grows a mixture of potatoes, field-scale vegetables and cereals on a seven-year rotation.

Flexibility is key in growing 40ha of seed potatoes – plus an additional 10ha for the ware market, he adds. Other enterprises are Brussels sprouts (10ha), parsnips (6ha), malting barley (40ha), oats (10ha) and winter wheat (14ha).

All markets are within about 20 miles, says Mr Steven, who farms with his brother, John, and cousins. It’s a key way of keeping transport costs low, he adds. “Where we are, it is very easy to spend £500 on a lorry going somewhere.”

Potatoes go to Inchture for packing, while the vegetables and oats go to a local processor and Scott’s Porage Oats at Cupar. Wheat goes to the Cameronbridge distillery and malting barley goes to McCreath Simpson and Prentice at Dundee.

Cover crops

The farm’s location brings other challenges, too. The coastal climate – and cold sea fog or “haar” – means weather windows are frequently tight, restricting the timeliness of operations during spring and summer. “You can lose a week

very quickly in this part of the world,” he says.

Keen to improve soil health and structure, Mr Steven is experimenting with cover crops ahead of potatoes and Brussels sprouts. But damp autumn weather doesn’t encourage important early growth in chopped straw stubbles.

“It’s a learning curve and we feel the soil is better if there is something in it. But we also need a cover crop that doesn’t encourage slugs, especially as we chop straw. They are the bane of potatoes and Brussels sprouts,” he says.

“We’ve done radish mixes and didn’t let it go to seed, but we’ve still had volunteers coming up in our sprout crop. So we’re still trying to discover the best cover crop mixture – what will most benefit the crops and soil.”

Soil structure

Chopping straw after winter barley for 20-plus years has helped improve soil organic matter. But it adds to the challenge of establishing cover crops efficiently, and Mr Steven’s determination to reduce his cultivations.

“Two years ago, we grew vetch and clover and lost one field to slugs. But another field sown across the dyke the next day was perfect. A lot of it depends on the weather – we need a good window to get something up and away.

“We’ve tried a stocks seeder unit on a Sumo and an Amazone one-pass, and they do the job

but we want to move less soil. That means finding a drill that can sow into chopped straw and get good seed-to-soil contact.”

An on-farm demonstration of a direct drill proved successful in a dry year. But Mr Steven says a machine must cope with all conditions. Manufacturers can be reluctant to put a drill on demo for such a short sowing window, he adds.

Avoiding compaction

“We try to avoid recreational cultivation, and used to rely on the frost to break down the soil. But we’ve stopped winter ploughing because we do overwintered stubbles, which means we don’t get that benefit.

“In the spring, the soil is too wet underneath so you immediately start with compaction. It means we are ploughing and then going in with a bed-tiller only a week or so before planting potatoes – it’s not ideal.”

At the same time, manufacturers have got too hung up on building more strength into machinery, says Mr Steven. “There isn’t much more you can do with a 200hp tractor than a 100hp tractor, but it is heavier and adds compaction,” he adds.

“We’re not just farming short term – we’re hopefully farming for future generations. We want to feel that our soil is improving. We firmly believe that if you look after your soil, it will look after you.” ■

FARMING AND TREES GO HAND IN HAND



FOR MORE INFORMATION:

www.tilhill.com

T: 07825 193278

E: simon.marrington@tilhill.com

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Editor Johann Tasker 07967 634971 • Project lead Anna Eccleston 07769 696074

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